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## CARDIAC ARRHYTHMIAS

# A NOVEL TECHNIQUE TO ACHIEVE BETTER LESIONS IN THE CORONARY SINUS: SAFETY AND FEASIBILITY

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**Background:** Atrial fibrillation (AF) refractory to pulmonary vein isolation may reflect arrhtymogenic foci within the coronary sinus (CS). The current approaches to radiofrequency (RF) ablation of the CS include RF delivery within the vessel (epicardial) or within the left atrium (LA) (endocardial). In both cases the energy is applied via the tip electrode of a percutaneous catheter. This energy is then dispersed through contact tissue to a dispersive electrode. We sought to assess the feasibility of using the electrode rings of a diagnostic catheter placed in CS, as dispersive electrode(s) for RF delivery during ablation within the LA of swine and to compare this novel technique to 2 established methods of CS ablation.

**Methods:** Using a robotic navigation system (Hansen), transeptal puncture was performed and an open irrigated ablation catheter (OIC) was advanced into the LA in 9 (50-60 kg) swines. A decapolar diagnostic catheter (7Fr, St. J.M.) was placed within the CS in all animals.

Six lesions per animals were placed in the LA with 3 different modalities using a fixed protocol (40 sec, 30 Watts, 42 °C with a flow rate of 30cc/min).

Lesions were targeted endocardially along the path of the CS, advancing the ablation catheter (AC) at each successive ring pair of the diagnostic catheter. Each ring pair of the decapole diagnostic catheter served as the dispersive electrode for RF energy when targeted by the AC (group I). These lesions were compared to lesions created epicardially from within the CS (group II) and to lesions created endocardially (group III) using a standard dispersive electrode patch placed on the animal's flank. At the end of each procedure necropsy was performed and lesions analyzed.

**Results:** Signal attenuation of lesions belonging to group I were significantly higher than those belonging to group II and group III ($p=0.0148$). Transmurality was achieved in 90% of the lesions belonging to group I and only in 39% of lesions belonging to group II and 42% of patients belonging to group III ( $p<0.001$).

**Conclusion:** This novel technique for ablation of CS appeared to achieve better lesions than standard approaches. These findings have important implications for both manual and robotic catheter ablation of AF.